Paper No. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte JIM D. REEVES,
BHUPENDRA K. GUPTA,
and
NRIPENDRA N. DAS

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Appeal No. 2002-0669
Application No. 09/527,270

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ON BRIEF

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Before KIMLIN, WARREN, and LIEBERMAN, Administrative Patent Judges.

LIEBERMAN, Administrative Patent Judge.

## DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner refusing to allow claim 15 and claims 8 through 14 as amended subsequent to the final rejection, which are all the claims pending in this application.

## THE INVENTION

The invention is directed to a process for forming a thermal barrier on a superalloy.

The first layer is a bond coat of MCrAlY allow. The second layer is an inward diffusion aluminide layer which has a diffusion zone below the surface of the bond coat. The third layer is a thermal barrier coating. The conditions required by the claimed subject matter are directed to parameters circumscribed by the term, "about." The term, "about" is utilized with respect to the concentration of an activator, the temperature of an aluminiding reaction and the duration. Additional limitations are present in the following illustrative claims.

## THE CLAIMS

Claims 8 and 15 are illustrative of appellants' invention and are reproduced below:

> 8. A process for forming a thermal barrier coating system on a surface of a superalloy component, the method comprising the steps of:
>
> plasma spraying an MCrAlY bond coat on the surface of the component to have a surface roughness of at least 300 $\mu$inch Ra and a surface area ratio of at least 1.4;
>
> forming an inward diffusion aluminide layer in the surface of the bond coat using a vapor phase deposition process performed in a coating container and having process parameters that include a process temperature of about 925°C to about 1040°C and a process duration of four to twelve hours, the vapor phase deposition process using an aluminum donor containing 50 to 60 weight percent aluminum and an aluminum halide activator at a concentration of about 1.8 grams of activator per liter of coating container volume, the inward diffusion aluminide layer causing the surface of the bond coat to have an aluminum concentration of at least 30 weight percent while maintaining a surface roughness of at least 300 $\mu$inch Ra and a surface area ratio of at least 1.4; and
>
> depositing a ceramic layer on the bond coat.
>
> 15. A process for forming a thermal barrier coating system on a surface of a

nickel-base superalloy component, the method comprising the steps of:

plasma spraying an MCrAlY bond coat on the surface of the component to have a surface roughness of 300 $\mu$inch to 800 $\mu$inch Ra and a surface area ratio of at least 1.4;

forming an inward diffusion aluminide layer in the surface of the bond coat using a vapor phase deposition process performed in a coating container and having process parameters that include a process temperature of about 1010°C and a duration of about six hours, the vapor phase deposition process using $Co_2Al_5$ as an aluminum donor and aluminum fluoride as an activator at a concentration of about 1.8 grams of activator per liter of coating container volume, the inward diffusion aluminide layer causing the surface of the bond coat to have an aluminum concentration of at least 30 weight percent and a nickel concentration of less than 50 weight percent while maintaining a surface roughness of at least 300 $\mu$inch to 800 $\mu$inch Ra and a surface area ratio of at least 1.4; and

air plasma spraying a ceramic layer on the bond coat.

## THE REJECTION

Claims 8 through 15 stand rejected under 35 U. S. C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

## OPINION

We have carefully considered all of the arguments advanced by the appellants and the examiner, and agree with the appellants for the reasons set forth in the Brief and Reply Brief and those below that the rejection of the claims under Section 112, first paragraph is not well founded. Accordingly, we do not sustain this rejection.

The Rejection Under Section 112

We turn to the sole issue before us, that of the examiner's rejection under the first paragraph of 35 U.S.C. § 112 as being directed to new matter. In a rejection under the first paragraph of 35 U.S.C. § 112, paragraph one, it is sufficient if the originally filed disclosure would have conveyed to one of ordinary skill in the art that the appellants had possession of the concept of what is claimed. In re Anderson, 471 F.2d 1237, 1240-41, 176 USPQ 331, 333 (CCPA 1973). There is no requirement that the language of the claimed subject matter be present in the specification in ipsissima verba.

It is the examiner's position that there is no basis in the specification for the numerous utilizations of the term, "about." See Answer, pages 4 and 5. The examiner argues that the original specification does not provide basis in claim 8 for the feature of "about 1.8 grams of activator per liter," and for claim 15 for that feature and for the additional features of "about 1010°C and "about six hours." The examiner argues that only the features of exact temperatures, times, donor or activator material as disclosed in Tables I and II of the specification. Id. Stated otherwise, it is the examiner's position that the specification does not provide an adequate description to insert the term "about." Accordingly, the claimed subject matter should have been limited to the exact conditions set forth in Tables I and II of the specification. We disagree.

Turning initially to claim 8, which contains the phrase, "an aluminum halide activator at a concentration of about 1.8 grams of activator per liter of coating containing

volume," the specification as filed directed to original claim 8 did not even require the presence of an activator. In addition, original claim 8 describes both the temperature and proportion of Al donor utilizing the term, "about." Furthermore, we find that original claim 9 states that, "the vapor phase deposition process employs a halide as an activator." Original claim15 directed to aluminum fluoride as an activator requires no specific concentration for the activator. We also find that original claim 15 describes both the temperature and the duration utilizing the term, "about." In contrast, only the Examples in Table I and Table II of the specification, pages 9 and 11 respectively, describe a method conducted at 1010°C, for 6 hours, utilizing $Co_2Al_5$ as an aluminum donor and $AlF_3$ as an activator at a concentration of 1.8 g/l of coating container volume. When viewing the specification as a whole, however, we conclude that the original application establishes that appellants did not intend the claimed subject matter to be limited to the specific values of Tables I and II. We further conclude that the intent of appellants is that the values specifically exemplified in Tables I and II would have conveyed to one of ordinary skill in the art that included therein were values less than or greater than those enumerated. Accordingly, the appellants had possession of the claimed subject matter before us.

## DECISION

The rejection of claims 8 through 15 under 35 U. S. C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention is reversed.

The decision of the examiner is reversed.

## REVERSED

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| EDWARD C. KIMLIN<br>Administrative Patent Judge | ) | |
| CHARLES F. WARREN<br>Administrative Patent Judge | ) | BOARD OF PATENT APPEALS AND INTERFERENCES |
| PAUL LIEBERMAN<br>Administrative Patent Judge | ) | |

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